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Test 997: Ford 5000 Gasoline Select-O-Speed (Also Ford 5000 Gasoline Select-O-Speed Row Crop)

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NEBRASKA TRACTOR TEST 997 – FORD 5000 GASOLINE SELECT-O-SPEED (ALSO FORD 5000 GASOLINE SELECT-O-SPEED ROW CROP)

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption: Gal per hr	Fuel Consumption: Lb per hp-hr	Fuel Consumption: Hp-hr per gal	Temperature Degrees F: Cooling medium	Temperature Degrees F: Air wet bulb	Temperature Degrees F: Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours								
65.64	2100	5.660	0.525	11.60	210	55	75	29.143
Standard Power Take-off Speed (540 rpm)—One Hour								
61.97	1901	5.290	0.520	11.71	210	55	75	29.145
VARYING POWER AND FUEL CONSUMPTION—TWO HOURS								
57.70	2170	5.317	0.562	10.85	204	55	74	.....
0.00	2358	2.013	.....	.....	194	54	71	.....
30.09	2265	3.672	0.744	8.19	202	55	74	.....
65.51	2100	5.651	0.526	11.59	209	56	77	.....
15.30	2303	2.895	1.153	5.28	198	55	75	.....
44.44	2228	4.431	0.608	10.03	204	56	76	.....
Av 35.51	**2237**	**3.997**	**0.686**	**8.88**	**202**	**55**	**74**	**29.165**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption: Gal per hr	Fuel Consumption: Lb per hp-hr	Fuel Consumption: Hp-hr per gal	Temp Degrees F: Cool-ing med	Temp Degrees F: Air wet bulb	Temp Degrees F: Air dry bulb	Barom-eter inches of Mercury
VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST											
Maximum Available Power—Two Hours—6th Gear											
54.53	4895	4.18	2097	7.82	5.466	0.611	9.98	203	49	62	29.020
75% of Pull at Maximum Power—Ten Hours—6th Gear											
44.46	3695	4.51	2216	5.70	4.884	0.669	9.10	204	42	49	29.006
50% of Pull at Maximum Power—Two Hours—6th Gear											
32.51	2559	4.76	2286	3.62	4.153	0.779	7.83	195	44	54	29.005
MAXIMUM POWER WITH BALLAST											
37.59	7138	1.98	2185	14.08	4th Gear			206	49	60	29.000
53.50	6436	3.12	2099	11.79	5th Gear			206	50	62	29.000
54.69	4922	4.17	2100	8.33	6th Gear			206	50	64	29.000
53.80	4142	4.87	2100	6.89	7th Gear			206	51	64	29.010
53.29	3135	6.37	2100	5.28	8th Gear			205	50	64	29.010
50.64	1803	10.53	2098	3.08	9th Gear			205	51	65	29.000
MAXIMUM PULL WITHOUT BALLAST											
42.37	4937	3.22	2207	14.01	5th Gear			200	42	54	28.550

VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST

Pounds pull	4922	5119	5275	5240	5173	5148
Horsepower	54.69	51.10	46.55	40.13	34.11	28.19
Crankshaft speed rpm	2100	1897	1679	1459	1253	1041
Miles per hour	4.17	3.74	3.31	2.87	2.47	2.05
Slip of drivers, %	8.33	8.74	8.85	8.97	8.74	8.97

TIRES, BALLAST and WEIGHT		With Ballast	Without Ballast
Rear tires	—No, size, ply & psi	Two 16.9-30; 6; 16	Two 16.9-30; 6; 16
Ballast	—Liquid	798 lb each	None
	Cast iron	1012 lb each	None
Front tires	—No, size, ply & psi	Two 7.50-16; 4; 24	Two.750-16; 4; 24
Ballast	—Liquid	74 lb each	None
	Cast iron	111 lb each	None
Height of drawbar		22½ inches	24 inches
Static weight with operator—Rear		7350 lb	3730 lb
Front		2350 lb	1980 lb
Total		9700 lb	5710 lb

Department of Agricultural Engineering
Date of Test: November 7 to November 25, 1968
Manufacturer: FORD MOTOR COMPANY, FORD TRACTOR OPERATIONS, BIRMINGHAM, MICHIGAN

FUEL, OIL and TIME **Fuel** regular gasoline **Octane No** Motor 84.8 Research 93.2 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.7320 **Weight per gallon** 6.094 lb **Oil** SAE 10W-30 **API service classification** MS DG DM **To motor** 1.705 gal **Drained from motor** 1.360 gal **Transmission lubricant** Ford oil ESN-M2C41-A or M-2C53-B **Final-drive lubricant** Ford oil ESN-M2C53-A or M2C53B **Total time engine was operated** 57 hours.

ENGINE **Make** Ford gasoline **Type** 4 cylinder vertical **Serial No** E006783 **Crankshaft mounted** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.4″ x 4.2″ **Compression ratio** 7.75 to 1 **Displacement** 256 cu in **Carburetor size** $1^{5}/_{16}$″ **Ignition system** battery **Cranking system** 12 volt electric **Lubrication** pressure **Air cleaner** oil washed wire mesh **Oil filter** full flow replaceable cotton blend element **Oil cooler** engine coolant heat exchanger in lower radiator tank for transmission oil **Fuel filter** edge type filter in sediment bowl **Muffler** was used **Cooling medium temperature control** thermostat.

CHASSIS **Type** standard **Serial No** C209905 **Tread width** rear 52″ to 80″ front 52″ to 80″ **Wheel base** 87.5″ **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 27.30″ Vertical distance above roadway 32.95″ Horizontal distance from center of rear wheel tread 0″ to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with operator controlled full range power shifting **Advertised speeds mph** first 1.0 second 1.5 third 1.7 fourth 2.3 fifth 3.6 sixth 4.6 seventh 5.3 eighth 6.9 ninth 11.1 tenth 16.4 reverse 3.1 and 4.6 **Clutch** oil cooled multiple disc clutches within transmission hydraulically operated **Brakes** oil cooled multiple disc mechanically operated by two foot pedals which can be locked **Steering** mechanical with power assist **Turning radius** (on concrete surface with brake applied) right 117″ left 117″ (on concrete surface without brake) right 141″ left 141″ **Turning space diameter** (on concrete surface with brake applied) right 249″ left 249″ (on concrete surface without brake) right 294″ left 294″ **Belt pulley** 1072 rpm at 2050 engine rpm diam 11″ face 6.5″ **Belt speed** 3087 fpm **Power take-off** 540 rpm at 1900 engine rpm.

REPAIRS AND ADJUSTMENTS During preliminary pto runs cylinder head was removed and combustion chamber cleaned. This was done twice. New spark plugs and ignition points were installed.

REMARKS: All test results were determined from observed data obtained in accordance with the SAE and ASAE test code. First, second and third gears were not run as it was necessary to limit the pull in fourth gear because of the stability formula. Tenth gear was not run because it exceeded 15 mph. During no ballast run it was necessary to limit the pull to avoid excessive tractor bounce.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 997.

L. F. LARSEN
Engineer-In-Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
D. E. LANE
Board of Tractor Test Engineers

The University of Nebraska Agricultural Experiment Station
E. F. Frolik, Dean; H. W. Ottoson, Director; Lincoln, Nebraska

EXPLANATION OF TEST REPORT

GENERAL CONDITIONS

Each tractor is a production model equipped for common usage. Power consuming accessories can be disconnected only when it is convenient for the operator to do so in practice. Additional weight can be added as ballast if the manufacturer regularly supplies it for sale. The static tire loads and the inflation pressures must conform to recommendations in the Tire Standards published by the Society of Automotive Engineers.

PREPARATION FOR PERFORMANCE RUNS

The engine crankcase is drained and refilled with a measured amount of new oil conforming to specifications in the operators manual. The fuel used and the maintenance operations must also conform to the published information delivered with the tractor. The tractor is then limbered-up for 12 hours on drawbar work in accordance with the manufacturer's published recommendations. The manufacturer's representative is present to make appropriate decisions regarding mechanical adjustments.

The tractor is equipped with approximately the amount of added ballast that is used during maximum drawbar tests. The tire tread-bar height must be at least 65% of new tread height prior to the maximum power run.

BELT OR POWER TAKE-OFF PERFORMANCE

Maximum Power and Fuel Consumption. The manufacturer's representative makes carburetor, fuel pump, ignition and governor control settings which remain unchanged throughout all subsequent runs. The governor and the manually operated governor control lever is set to provide the high-idle speed specified by the manufacturer for maximum power. Maximum power is measured by connecting the belt pulley or the power take-off to a dynamometer. The dynamometer load is then gradually increased until the engine is operating at the rated speed specified by the manufacturer for maximum power. The corresponding fuel consumption is measured.

Varying Power and Fuel Consumption. Six different horsepower levels are used to show corresponding fuel consumption rates and how the governor causes the engine to react to the following changes in dynamometer load: 85% of the dynamometer torque at maximum power; minimum dynamometer torque, ½ of the 85% torque; maximum power, ¼ and ¾ of the 85% torque. Since a tractor is generally subjected to varying loads the average of the results in this test serve well for predicting the fuel consumption of a tractor in general usage.

DRAWBAR PERFORMANCE

All engine adjustments are the same as those used in the belt or power take-off tests. If the manufacturer specifies a different rated crankshaft speed for drawbar operations, then the position of the manually operated governor control is changed to provide the high-idle speed specified by the manufacturer in the operating instructions.

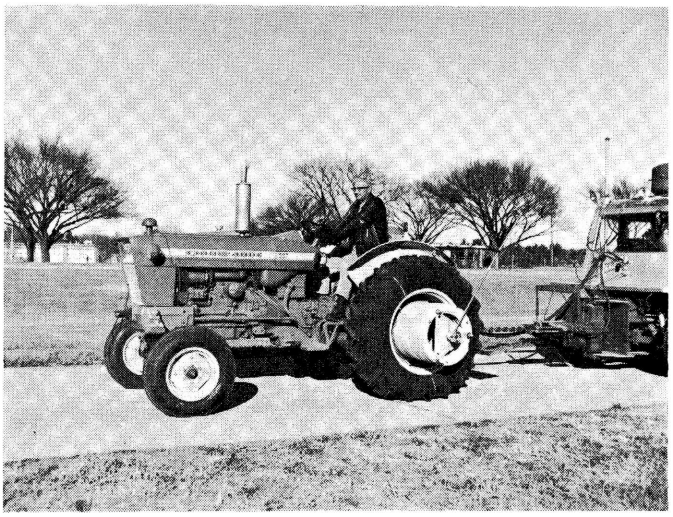
Varying Power and Fuel Consumption With Ballast. The varying power runs are made to show the effect of speed-control devices (engine, governor, automatic transmission, etc.) on horsepower, speed and fuel consumption. These runs are made around the entire test course which has two 180 degree turns with a minimum radius of 50 feet. The drawbar pull is set at 3 different levels as follows: (1) as near to the pull at maximum power as possible and still have the tractor maintain the travel speed at maximum horsepower on the straight sections of the test course; (2) 75% of the pull at maximum power; and (3) 50% of the pull at maximum power. Prior to 1958, fuel consumption data (10 hour test) were shown only for the pull obtained at maximum power for tractors having torque converters and at 75% of the pull obtained at maximum power for gear-type tractors.

Maximum Power with Ballast. Maximum power is measured on straight level sections of the test course. Data are shown for not more than 12 different gears or travel speeds. Some gears or travel speeds may be omitted because of high slippage of the traction members or because the travel speed may exceed the safe-limit for the test course. The maximum safe speed for the Nebraska Test Course has been set at 15 miles per hour. The slippage limits have been set at 15% and 7% for pneumatic tires and steel tracks or lugs, respectively. Higher slippage gives widely varying results.

Maximum Pull without Ballast. All added ballast is removed from the tractor. The drawbar pull is determined at slip limits of 15% for pneumatic tires or 7% for steel tracks or lugs. The tractor is operated at the fastest possible travel speed.

Varying Power and Travel Speed with Ballast. Travel speeds corresponding to drawbar pulls beyond the maximum power range are obtained to show the "lugging ability" of the tractor. The run starts with the pull at maximum power; then additional drawbar pull is applied to cause decreasing speeds. The run is ended by one of three conditions: (1) maximum pull is obtained, (2) the maximum slippage limit is reached, or (3) some other operating limit is reached.

For additional information about the **Nebraska Tractor Tests** write to the **Department of Agricultural Engineering, University of Nebraska, Lincoln, Nebraska.**



FORD 5000 GASOLINE SELECT-O-SPEED